

**Integrated farming systems in Brazil under scrutiny: a systematic analysis of its literature from 2010 to 2020**

Roberto Giolo de Almeida^{*1}, Elizandra da Silva Fialho², Caroline C. de Oliveira¹, Davi José Bungenstab¹, Valdemir Antônio Laura¹, Rebeca R. O. L. de Jesus³

¹Embrapa Beef Cattle, Campo Grande/MS, Brazil; ²Universidade Estadual de Mato Grosso do Sul, Aquidauana/MS, Brazil; ³Universidade Anhanguera-Uniderp, Campo Grande/MS.

^{*}Researcher at Embrapa Beef Cattle - roberto.giolo@embrapa.br

Integrated systems have been used in Brazil under a variety of models adapted to regional conditions. The ABC Plan (Low Carbon Agriculture), a national public policy with decarbonization targets for 2020 has listed and stimulated since the year 2010, as technological processes that mitigate greenhouse gases. In this context, this study has conducted a systematic and analytical review of literature regarding these systems in Brazil, from 2010 to 2020. A total of 118 open access publications were selected in the databases Scopus, Web of Science, Scielo and Google Scholar. Data were grouped by type of system, integrated crop-livestock (ICL), integrated crop-livestock-forestry (ICLF) and integrated livestock-forestry (ILF), ordering them according to location and soil class and the plant and animal components used. The grouped data were submitted to relative frequency analysis and presented as descriptive analysis. As for Brazilian geographic regions, Central Brazil (Midwest) stands out with 65 publications (55.08%) in the period considered for the study. The Southeast (18.65%) and South (17.80%) were in an intermediate position and the Northeast (6.78%) and North (1.69%) presented the lowest number of publications, always considering only open access publications. In the distribution regarding soil classes, the highest proportion of publications was on Latosol conditions (67.80%), while a good portion of publications did not mention the soil class of systems under study (24.59%). Other soil classes, including Neosols, Cambisols and Argisols summed about 7.6%. As for cash crops, soybeans (55.08%) and corn (46.61%), stood out from the others, since they also cover the largest area planted among crops in the country. Forages of the genus *Brachiaria* were the ones that appeared most in the selected publications, especially *Brachiaria brizantha* cv. BRS Piatã (30.51%), *B. brizantha* cv. Marandu (23.73%) and *B. decumbens* (12.71%), being also the most used in tropical pastures in Brazil. Regarding forest species in publications dealing with ICLF and ILF systems, 66.95% addressed eucalyptus and 19.51% did not mention the tree component. Regarding the animal component used in integrated systems, there was a predominance of publications addressing beef cattle, with the Nellore (24.57%), Angus (5.08%) and other Zebu breeds (2.54%). Dairy cattle, such as the Girolando (2.54%) and Guzerá (1.69%) breeds, and sheep, of the Ile-de-France (1.69%) and Texel (0.85%) breeds, appeared in smaller quantities in the selected publications. Results show that ICLF systems have a larger number of studies, possibly due to its greater complexity, despite the ICL system to be more frequently used in Brazil. The most frequent farming components in these systems, were cash crops (soybean and corn), grazing forages (*Brachiaria* sp.), forest species (eucalyptus) and animal (Nellore beef cattle), which are also most frequently used in Brazil.

Keywords: crop-livestock, crop-livestock-forestry, livestock-forestry.